

Spontaneous Hemoperitoneum in Pregnancy (SHiP) and Endometriosis

-

An update

2008 - 2017

VUmc  **Endometriosecentrum**

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Disclosure

Disclosure of speaker's interests	
(Potential) conflict of interest	Nothing to declare
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<ul style="list-style-type: none">• Sponsorship or research funding• Fee or other (financial) payment• Shareholder• Other relationship, i.e. ...	Nothing to declare



Introduction

History

SHiP; *Spontaneous Hemoperitoneum in Pregnancy*: an unprovoked (nontraumatic) intraperitoneal bleeding in pregnancy (up to 42 days postpartum)

1778 - First case observed¹

1904 - Williams²

First review, total 32 cases

Maternal mortality ~ 56%

1950 - Hodgkinson and Christenson³

Women giving birth ~ mortality 76,3%

¹ Casaubon. Sur des tumeurs sanguines a la vulve. Recueil périodique de la Société de Santé a Paris, 1797, I (An V), 455-74

² Williams JW. Intrapelvic hematoma following labor not associated with lesions of uterus. Am J Obst. 1904; 50:442-455

³ Hodgkinson CP, Christenson RC. Hemorrhage from ruptured uteroovarian veins during pregnancy: report of three cases and review of the literature.. Am J Obst & Gynec. 1950; 59:1112-1117

Introduction

History



1987 - Ginsburg et al.⁴

Maternal mortality dropped ~ 4 %

Fetal mortality ~ 31 %

2009 - Brosens et al.⁵

Review 25 cases

No maternal deaths

Fetal mortality ~ 36 % (10/28 fetus)

⁴ Ginsburg KA, Valdes C, Schinder G. Spontaneous utero-ovarian vessel rupture during pregnancy: three case reports and a review of the literature. *Obstet Gynecol* 1987;69:474-6

⁵ Brosens IA, Fusi L, Brosens JJ. Endometriosis is a risk factor for spontaneous hemoperitoneum during pregnancy. *Fertil Steril.* 2009;92(4):1243-5

TABLE 1**Spontaneous hemoperitoneum in pregnancy (SHiP): demographic data and clinical outcome.**

Reference	Age	Parity	Gestation (weeks)	Endometriosis (rAFS stage)	Outcome
Rosales et al. (19)	23	?	22	—	NL (38 w)
Fiori (7)	28	0	37	—	NL
Wu et al. (22) ^a	31	1	33 (twins)	Yes (III)	NL/NL
Chiodo et al. (5)	22	0	31	Yes (IV)	SB
Koifman et al. (13)	24	0	37	—	NL
Hashimoto et al. (8)	40	2	33	—	NL
Dubuisson et al. (6)	25	0	30	—	NND
	36	0	32	PF	SB
	31	0	30	—	SB
Passos et al. (16) ^a	30	0	32 (twins)	Yes (III)	NL/NL
	32	0	31	Yes (III)	NL
Katorza et al. (12) ^a	29	0	28 (twins)	Yes (I)	RDS/RDS
	31	1	26	Yes (III)	SB
	32	0	29	Yes (III)	CP
Roger et al. (18)	34	1	27	PF	NL (38 w)
Aziz et al. (3)	30	0	20	Yes (I)	SB
Vellekoop (21)	31	0	25	—	NL (38 w)
Ismail and Shervington (10)	?	0	33	Yes (I)	NL
Renuka et al. (17)	25	1	36	—	SB
Leung et al. (14)	35	0	33	Yes (I)	SB
Swaegers et al. (20)	29	0	33	—	NL
Mizumoto et al. (15)	28	0	28	Yes (II)	NND
Bellucci et al. (4)	30	1	34	—	NL
Kalaichandran (11)	33	0	29	—	NND
Inoue et al. (9)	37	0	29	Yes (III)	NL

Endometriosis
52%

Note: CP = cerebral palsy; NL = normal; NND = neonatal death; PF = parametrial fenestration or laceration (Allan-Masters syndrome); RDS = respiratory distress syndrome; SB = stillborn.

^a SHiP after IVF-ET.

Brosens. Correspondence. Fertil Steril 2009.

Update of the literature



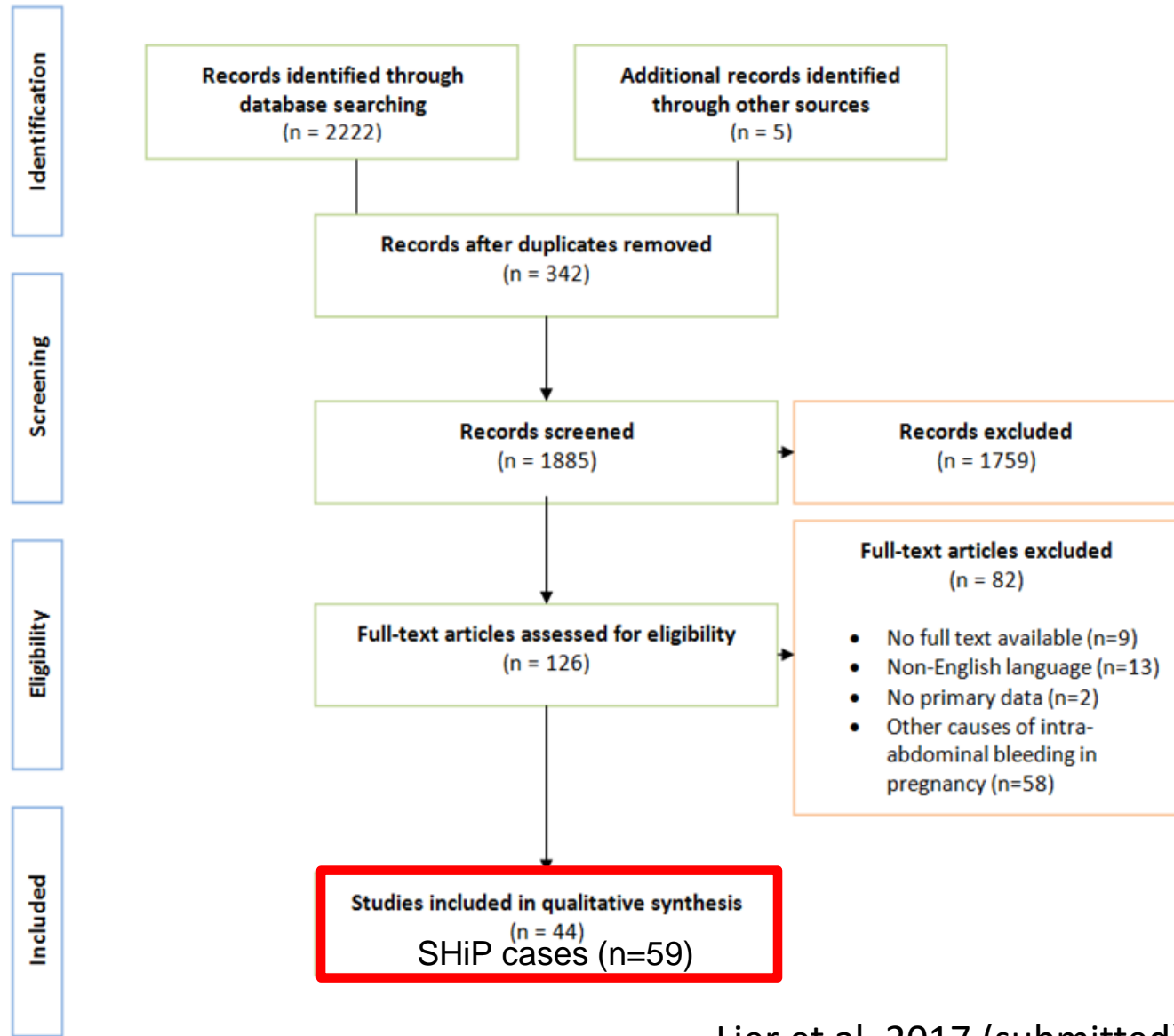
2016

- Search Pubmed, Embase
- August 2008 – September 2016
 - *“hemoperitoneum”, “rupture”, “vessels”, “spontaneous”, “pregnancy”, “labor”, “postpartum”, “endometriosis”*

Lier et al, 2017 (submitted)



Flowchart



Lier et al, 2017 (submitted)

Reference	Age	Parity	Gestation (wks)	Endometriosis (ASRM stage)	Outcome	
Aggarwal et al. (2014)	31	0	21 (twins)	Yes (IV)	SB/SB (22 w)	Mean age 32.1 years (SD ± 5.0)
Mohammed et al. (2014)	32	4	PP + 2	No	NL	
Diaz-Murillo et al. (2014)	35	0	37	No	NL (37 w)	
Lim et al. (2014)	24	0	37	No	NL (37 w)	
Nguessan et al. (2013)	33	0	35 (twins)	No	CP / NL (35 w)	Nulliparous 67.8% (n=40)
Black et al. (2013)	37	1	PP + 1 / PP + 7	No	NL	
Vincenzo et al. (2013)	33	0	24	Yes (IV)	SB (24 w)	
Fan et al. (2013)	30	0	28	No	SB (28 w)	
Doger et al. (2013)	26	0	32 (twins)	No	NL (35 w)	Conceived after ART 27,1 % (n=16)
Maya et al. (2012)	30	1	29	No	NL (37 w)	
Kondoh et al. (2012)	31	0	29	No	NL (29 w)	
Boztosun et al. (2012)	25	0	38	Yes (light)	NL (38 w)	
Al Qahtani (2012)	37	4	38	No	RDS (38 w)	Endometriosis 55,9 % (n=33)
Nakaya et al. (2011)	25	0	28	No	NL (28 w)	
Williamson et al. (2011)	37	0	37	Yes (IV)	SB (37 w)	
Kapila (2011)	21	0	29	No	SB (29 w)	
Gao et al. (2010)	29	1	PP + 2	Yes (IV)	NL	
Bloom et al. (2010)	28	0	34	No	NL (34 w)	
Giulini et al. (2010)	31	1	33	No	NL (33 w)	
Kim and Lee (2010)	I 33	0	33 (twins)	Yes (IV)	NL/NL (33w)	
	II 28	0	25	Yes (?)	NL (25 w)	
	III 40	1	40	Yes (IV)	NL (40 w)	
	IV 29	0	40	Yes (IV)	CP (40 w)	
Shannewaj et al. (2010)	26	0	30	No	SB (30 w)	
Huisman and Boers (2010)	33	0	36	No	NL (36 w)	
Brouckaert et al. (2010)	33	0	17	Yes (IV)	SB (17 w)	
Pezzuto et al. (2009)	40	0	15	No	NL (38 w)	
Grunewald and Jördens (2009)	33	2	27	Yes (light)	NL (42 w)	
Wada et al. (2009)	31	2	PP	Yes (severe)	NL	
Zhang et al. (2009)	I 38	0	29 (twins)	Yes (III)	SB/SB (29 w)	
	II 35	0	35	Yes (?)	NL (35 w)	
	III 34	1	30	No	RDS (30 w)	
Bouet et al. (2009)	33	0	24	Yes (?)	SB (24 w)	
Moreira et al. (2009)	39	2	40	No	NL (40 w)	
Roche et al. (2008)	43	0	33 (twins)	Yes (IV)	SB/SB (33 w)	

Results

SHiP	Lier et al, 2017 (submitted)	Number (n)	Percentage (%)
Trimester	Second	16	27.1%
	Third	30	50.8%
	Peri-/postpartum	13	22.0%
Symptoms	Abdominal pain	56	94.9%
	Signs hypovolemic shock	28	47.5%
	Signs fetal distress	24	40.7%
Intervention	Laparotomy	50	84.7%
	Laproscopy	6	10,2%
	Combination of both	3	5,1 %
Source bleeding	Endometriosis/deciduosis	12	20.3%
	Utero-ovarian vessels/varices	29	49.2%
	Combination	10	16.9%
	No bleeding foci could be indentified	4	6.8%

SHIP	Lier et al, 2017 (submitted)			Brosens et al, 2009	
Hemi-Peritoneum (mL)	Median	1600	(IQR 1000-2500)	2100	(IQR 500-4000)
Successful continuation of pregnancy after intervention		7/59	11,9%	3/25	12%
Perinatal mortality		18/67	27%	10/28	36%
	Association with endometriosis	14/18	77,7%		
Maternal mortality		1/59	1,7%	0/25	0%

Published in 2016

Spontaneous haemoperitoneum in pregnancy and endometriosis: a case series

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Incidence & severity of
SHiP is associated with
IVF in endometriosis
patients

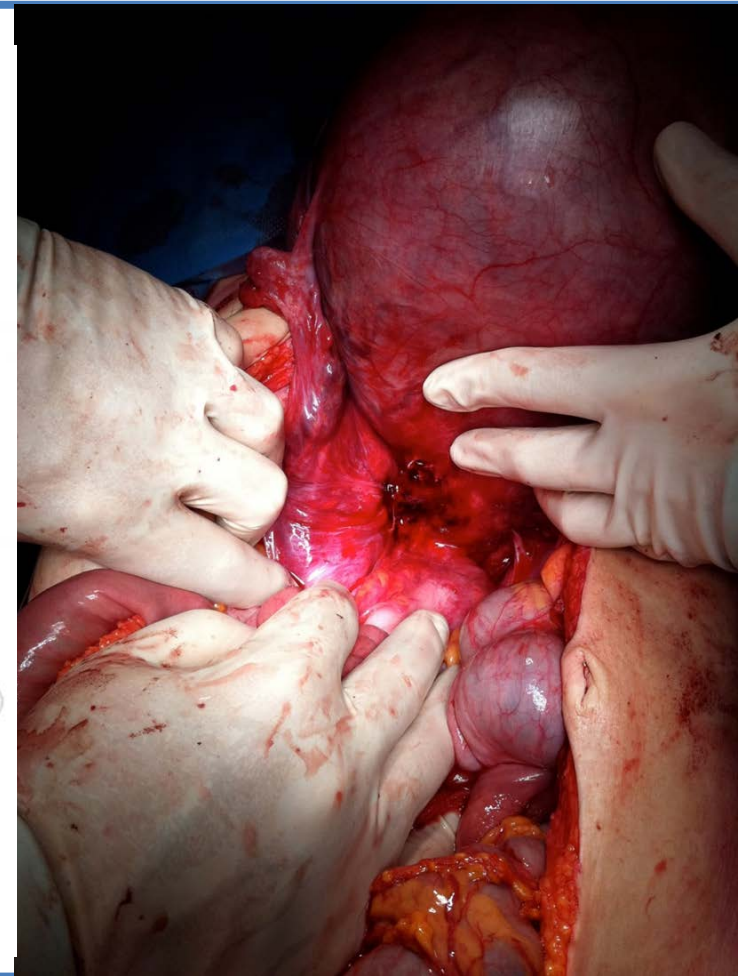
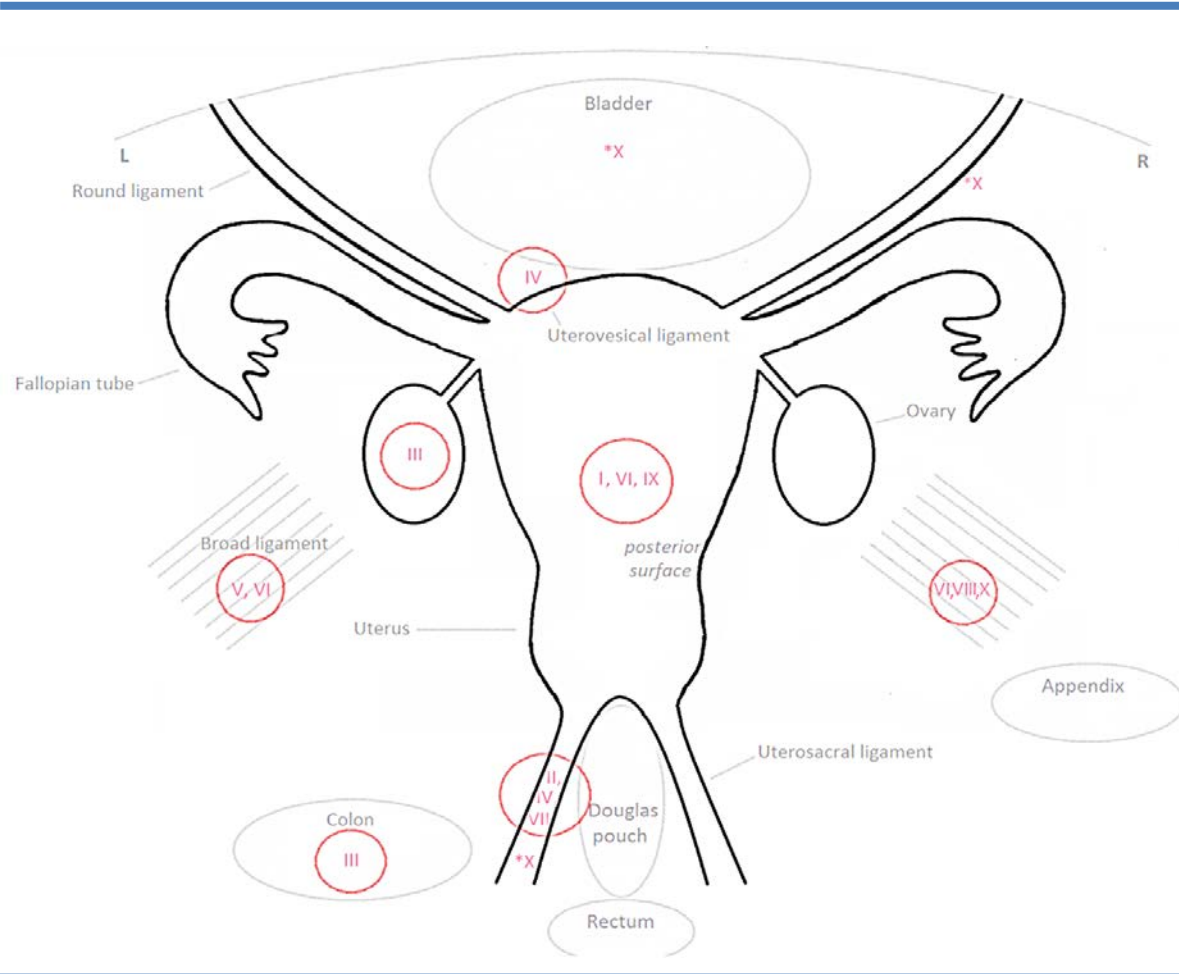
Recurrence of SHiP in 4/15
events

**Severe spontaneous
hemoperitoneum in pregnancy may
be linked to in vitro fertilization in
patients with endometriosis: a
systematic review**

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Published in 2016



Work in progress

- SHIP vascular study

An immunohistochemical study of biopsies obtained from the bleeding site in patients with SHiP to investigate the vascular changes causing the SHiP bleeding.



- SHIP psychological study

To investigate the psychological and functional recovery of women, and their partners, after SHIP. This study will assess illness perception, coping and QOL by suitable questionnaires and a face-to-face in-depth-interview.



Work in progress

Prospective National Registration of SHiP through *Obstetric Survey Systems (OSS)*

Since 2016

UKOSS (United Kingdom)

NethOSS (Netherlands)



Take-home messages

SHiP

- Rare, but life-threatening complication of pregnancy
- Third trimester
- Endometriosis is a major risk factor
- Associated with adverse pregnancy outcome
- Neonatal mortality remains high